6. QUASI-CRYSTALLOID BIOPOLYMER ORGANIZATION FROM THE SCLEREIDS OF ARMENIACA VULGARIS LAM.

Short communication

M. KEDVES and I. ROJIK

Cell Biological and Evolutionary Micropaleontological Laboratory of the Department of Botany of the J. A. University, H–6701, P.O. Box 657, Szeged, Hungary, and Faculty of Sciences, Laboratory of Electron-microscopy P.O. Box 553, Szeged, Hungary

It was emphasized previously (KEDVES, 1989), that our research program of biopolymer organization of biological objects includes all kinds of plant cell wall. Till now the sporopollenin type biopolymer structures were the subjects of our investigations, but we have several TEM data about the partially degraded plant cell wall of parenchym, xylem, and fiber (fibrous elements). TEM study of partially degraded sclereids of *Armeniaca vulgaris* LAM. were not successful for the first attempt. Reconstructed researches are in progress in this subject. Of the large program as preliminary results the following can be summarized:

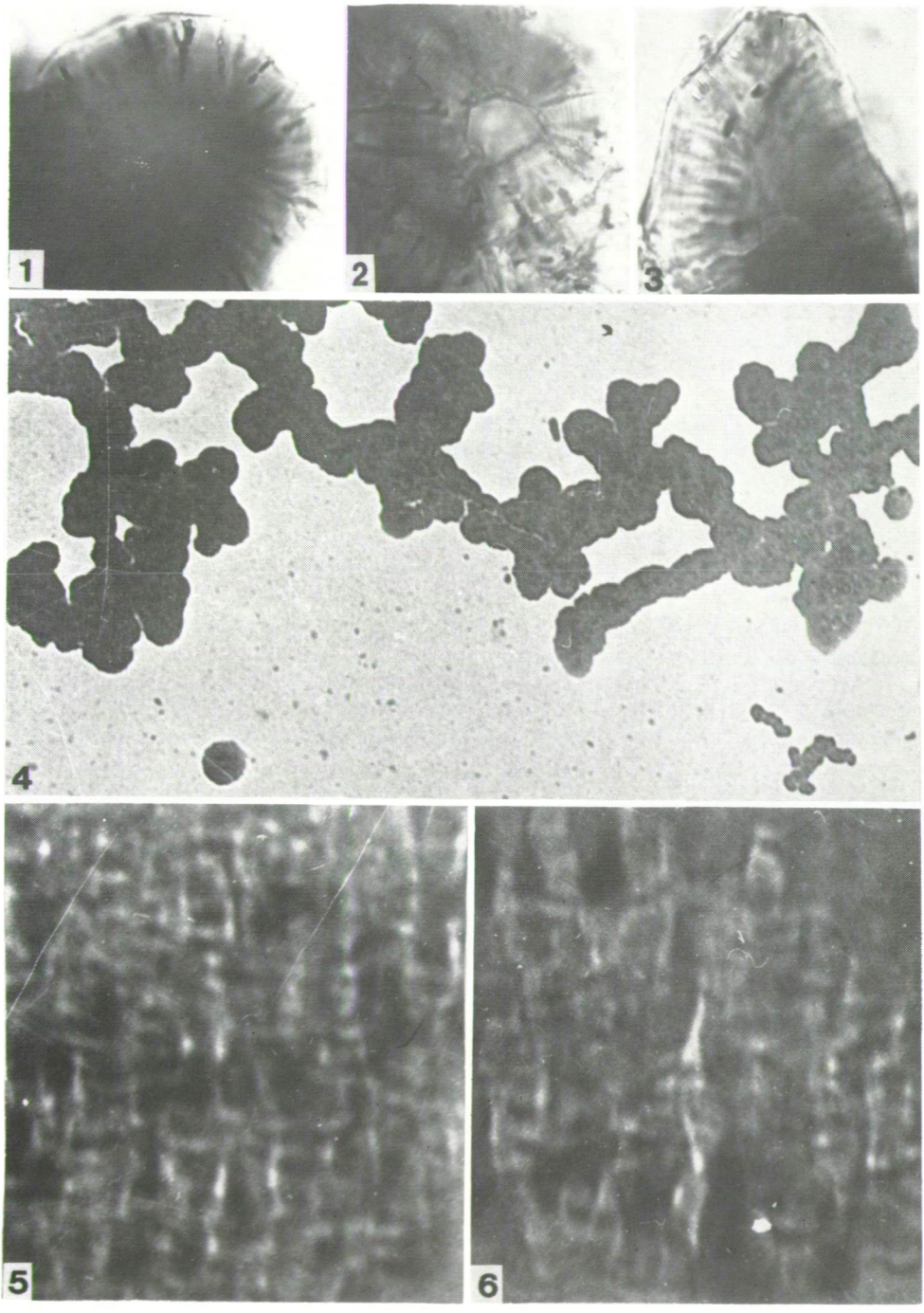
1. By the light microscopical method the partially degraded sclereids seemed to be not degraded (Plate 6.1., figs. 1–3, plate 6.2., figs. 1–3).
2. The fragmentation method resulted new and interesting data.
2.1. A regular basic pentagonal polygon in Å dimension was observed (Plate 6.1., fig. 4).
2.2. Highly organized globular units of 60–110 Å in diameter were found. These units are arranged into further highly organized levels:
— filamentosus (Plate 6.1., fig. 4)
— larger globular of 220–320 Å in diameter (Plate 6.2., figs. 4, 5)
— single, compound and open polygon sensu SOUTHWORTH (1986) (Plate 6.1., fig. 4).
3. Light globular units in all probability as stabilizing elements of the metastable quasi-crystalloid skeleton were also observed (Plate 6.1., figs. 5, 6). Globular units of 4–6 Å in diameter are aligned and diversified, moreover spherical torsion of this biopolymer structure was also found. This is also an argument of the extra-quasi-crystalloid skeleton organization of this unit.

This work was supported by the grant OTKA–2, 24/88.

References

KEDVES, M. (1989): Transmission electron microscopical investigations on partially degraded plant cell walls. — V.th Symposium of the Hungarian Plant Anatomy, Abstracts of Papers, 22.

SOUTHWORTH, D. (1986): Substructural organization of pollen exines. In: Pollen and Spores: Form and Function. — Linnean Society of London, 61–69.

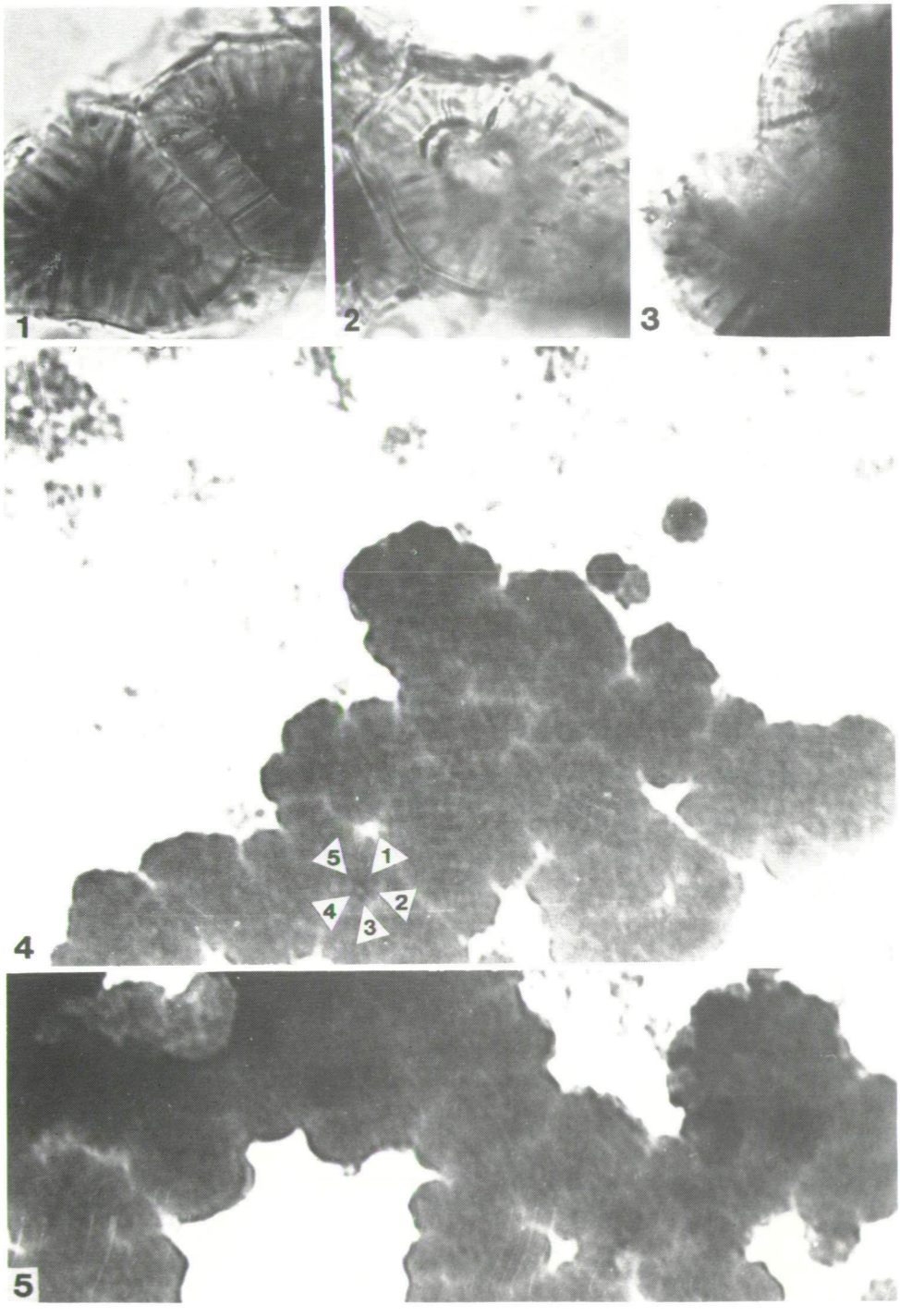

1
2
3
4
5
6

◀ Plate 6.1.

Armeniaca vulgaris LAM. sclereids
1—3. Light-microscope photographs of the sclereids after experiment No 960. 1000 x.
4. TEM picture of the biopolymer units. Experiment No 959, basic negative no 655. 50 000 x.
5,6. TEM pictures of the biopolymer structure. Experiment No 959, basic negative no 660. 500 000 x.

Plate 6.2. ▶

Armeniaca vulgaris LAM. sclereids
1—3. Light-microscope photographs of the sclereids after experiment No 964. 1000 x.
4, 5. TEM pictures of the biopolymer structure. The basic biopolymer pentagons and the highly organized globular structures are illustrated. Experiment No 963, basic negative no 670. 100 000 x.


1
2
3
5
1
4
2
3
4
5